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ABSTRACT

This module is one of a series of 127 performance-based teacher education (PBTE) learning packages focusing upon specific professional competencies of vocational teaching through research as being important to successful vocational teaching at both the secondary and postsecondary levels of instruction. The module includes five learning experiences designed to help prospective teachers become competent in operating filmstrip and slide equipment and in using filmstrips and slides to present information in the classroom or laboratory. The module is also intended to help prospective teachers gain skill in determining when a filmstrip or a set of slides is the best audiovisual device to use for a particular lesson. Each learning experience consists of an enabling objective, several activities, and a feedback section. The final learning experience requires the student-teacher to present information with filmstrips and slides in an actual teaching situation. A teacher performance assessment form for the student's resource person to use in evaluating his/her performance completes the package. (KC)

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Present Information with Filmstrips and Slides

Second Edition

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FOREWORD

This module is one of a series of 127 performance-based teacher education (PBTE) learning packages focusing upon specific professional competencies of vocational teachers. The competencies upon which these modules are based were identified and verified through research as being important to successful vocational teaching at both the secondary and postsecondary levels of instruction. The modules are suitable for the preparation of teachers and other occupational trainers in all occupational areas.

Each module provides learning experiences that integrate theory and application; each culminates with criterion-referenced assessment of the teacher's (instructor's, trainer's) performance of the specified competency. The materials are designed for use by teachers-in-training working individually or in groups under the direction and with the assistance of teacher educators or others acting as resource persons. Resource persons should be skilled in the teacher competencies being developed and should be thoroughly oriented to PBTE concepts and procedures before using these materials.

The design of the materials provides considerable flexibility for planning and conducting performance-based training programs for preservice and inservice teachers, as well as business-industry-labor trainers, to meet a wide variety of individual needs and interests. The materials are intended for use by universities and colleges, state departments of education, postsecondary institutions, local education agencies, and others responsible for the professional development of vocational teachers and other occupational trainers.

The PBTE curriculum packages in Categories A – J are products of a sustained research and development effort by the National Center's Program for Professional Development for Vocational Education. Many individuals, institutions, and agencies participated with the National Center and have made contributions to the systematic development, testing, revision, and refinement of these very significant training materials. Calvin J. Cotrell directed the vocational teacher competency research study upon which these modules are based and also directed the curriculum development effort from 1971 – 1972. Curtis R. Finch provided leadership for the program from 1972 – 1974. Over 40 teacher educators provided input in development of initial versions of the modules; over 2,000 teachers and 300 resource persons in 20 universities, colleges, and postsecondary institutions used the materials and provided feedback to the National Center for revisions and refinement.

Early versions of the materials were developed by the National Center in cooperation with the vocational teacher education faculties at Oregon State University and at the University of Missouri – Columbia. Preliminary testing of the materials was conducted at Oregon State University, Temple University, and the University of Missouri – Columbia.

Following preliminary testing, major revision of all materials was performed by National Center staff, with the assistance of numerous consultants and visiting scholars from throughout the country.

Advanced testing of the materials was carried out with assistance of the vocational teacher educators and students of Central Washington State College; Colorado State University; Ferris State College, Michigan; Florida State University; Holland College, P.E.I., Canada; Oklahoma State University; Rutgers University, New Jersey; State University College at Buffalo, New York; Temple University, Pennsylvania; University of Arizona; University of Michigan–Flint; University of Minnesota–Twin Cities; University of Nebraska–Lincoln; University of Northern Colorado; University of Pittsburgh, Pennsylvania; University of Tennessee; University of Vermont; and Utah State University.

The first published edition of the modules found widespread use nationwide and in many other countries of the world. User feedback from such extensive use, as well as the passage of time, called for the updating of the content, resources, and illustrations of the original materials. Furthermore, three new categories (K–M) have been added to the series, covering the areas of serving students with special/exceptional needs, improving students' basic and personal skills, and implementing competency-based education. This addition required the articulation of content among the original modules and those of the new categories.

Recognition is extended to the following individuals for their roles in the revision of the original materials: Lois G. Harrington, Catherine C. King-Fitch and Michael E. Wonscott, Program Associates, for revision of content and resources; Cheryl M. Lowry, Research Specialist, for illustration specifications; and Barbara Shea for art work. Special recognition is extended to the staff at AAVIM for their invaluable contributions to the quality of the final printed products, particularly to Donna Prichett for module layout, design, and final art work, and to George W. Smith Jr. for supervision of the module production process.

Robert E. Taylor
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- Installing educational programs and products.
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MODULE

C-24

Present Information with Filmstrips and Slides

Second Edition

Module C-24 of Category C—Instructional Execution
PROFESSIONAL TEACHER EDUCATION MODULE SERIES

The National Center for Research in Vocational Education
The Ohio State University

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INTRODUCTION

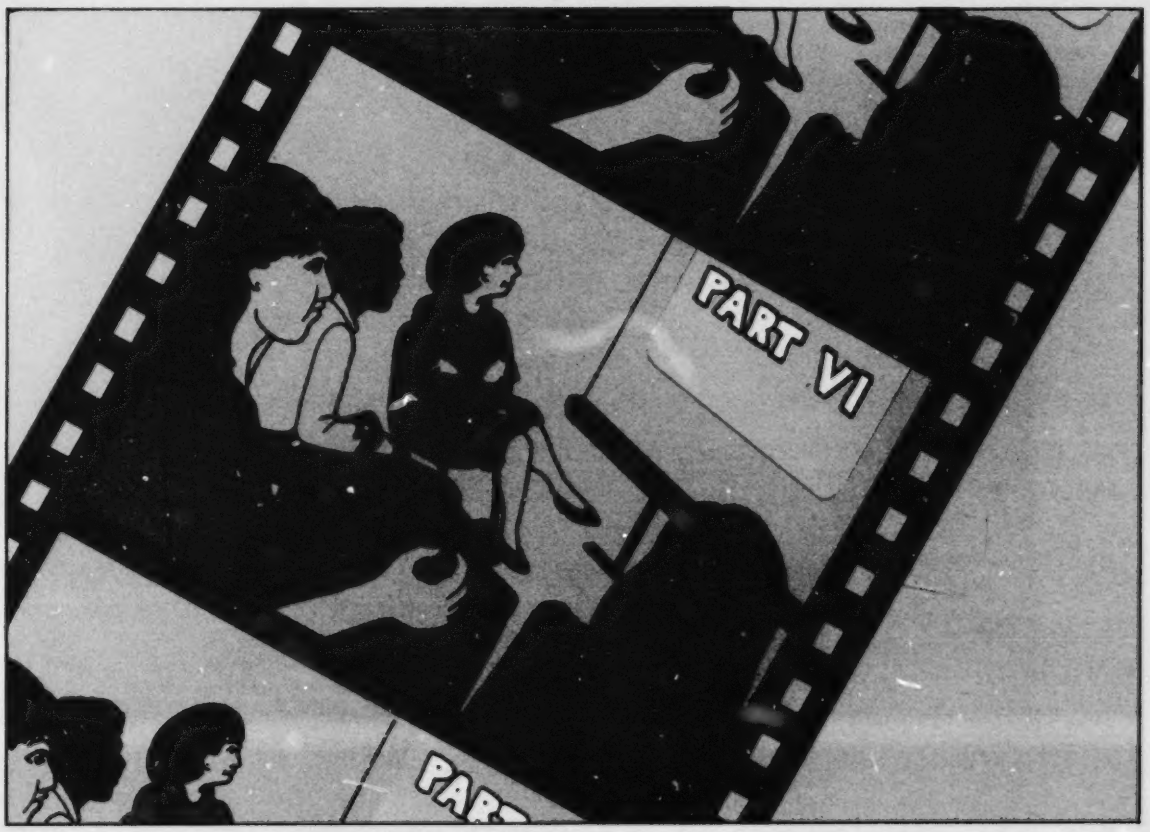
Audiovisual equipment and materials are versatile tools that can be used in a variety of ways. And they can help ensure that your lessons will be more effective and interesting. Filmstrips and slides are two audiovisual devices that can be put to good use in the vocational-technical classroom or laboratory on a group or individual viewing basis. Slides and filmstrips are composed of "still" pictures and, as such, are especially useful in illustrating concepts and principles when motion is not critical.

There are a number of advantages to using filmstrips and slides, including the following:

- Filmstrips are an excellent device for presenting close-ups of key steps involved in an otherwise difficult-to-view or dangerous process.
- Slides can serve that same function and, additionally, are an excellent means of bringing a "field trip" into the classroom since they can be made by the teacher.
- The order in which slides are presented is flexible, and individual slides can be easily removed and replaced with updated slides.
- The equipment is portable, relatively inexpensive, and can be used in the average classroom as a part of normal classroom instruction.
- These visuals allow students to see, as well as hear about, the material being covered.
- Students can be involved in the classroom activities by preparing slides or operating the equipment.
- Students can use the equipment and materials on an individual basis.

Filmstrips and slides can be used at any point in the lesson (introduction, body, summary) and they can be very effectively used in combination with other types of media such as the tape recorder.

This module is designed to help you become competent in operating filmstrip and slide equipment and in using filmstrips and slides to present information in the classroom or laboratory. It will also help you gain skill in determining when a filmstrip or a set of slides is the best audiovisual device (or one of the best) to use for a particular lesson.



ABOUT THIS MODULE

Objectives

Terminal Objective: In an actual teaching situation, present information with filmstrips and slides. Your performance will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 47–49 (*Learning Experience V*).

Enabling Objectives:

1. After completing the required reading, set up and operate a filmstrip projector (*Learning Experience I*).
2. After completing the required reading, present information with a filmstrip in a practice situation (*Learning Experience II*).
3. After completing the required reading, set up and operate a slide projector (*Learning Experience III*).
4. After completing the required reading, present information with slides in a practice situation (*Learning Experience IV*).

Prerequisites

To complete this module, you must have competency in developing a lesson plan and in selecting student instructional materials. If you do not already have these competencies, meet with your resource person to determine what method you will use to gain these skills. One option is to complete the information and practice activities in the following modules:

- *Develop a Lesson Plan*, Module B–4
- *Select Student Instructional Materials*, Module B–5

Resources

A list of the outside resources that supplement those contained within the module follows. Check with your resource person (1) to determine the availability and the location of these resources, (2) to locate additional references in your occupational specialty, and (3) to get assistance in setting up activities with peers or observations of skilled teachers, if necessary. Your resource person may also be contacted if you have any difficulty with directions or in assessing your progress at any time.

Learning Experience I

Required

A filmstrip projector to set up and operate.

A screen to use with the projector.

A filmstrip to use in setting up and operating the projector.

A measuring device (*ruler, yardstick, tape measure*) to use in setting up the projector.

Optional

Filmstrip/tape combination equipment to set up and operate.

An audiovisual expert with whom you can discuss the uses and operation of filmstrip projectors.

An audiovisual equipment dealer whom you can visit or write to concerning current filmstrip projector equipment and supplies.

Learning Experience II

Required

A filmstrip projector to use during a lesson.

A screen to use with the projector.

A filmstrip with which to present information in a lesson.

A resource person to role-play a student to whom you are presenting a lesson and to evaluate your performance in using filmstrips to present information.

Optional

A resource person to review the adequacy of your lesson plan.

A teacher skilled in presenting information with filmstrips whom you can observe.

Learning Experience III

Required

A slide projector to set up and operate.

A screen to use with the projector.

A group of slides to use in setting up and operating the projector.

A measuring device (*ruler, yardstick, tape measure*) to use in setting up the projector.

Optional

Slide/tape combination equipment to set up and operate.

An audiovisual expert with whom you can discuss the uses and operation of slide projectors.

An audiovisual equipment dealer whom you can visit or write to concerning current slide projector equipment and supplies.

Learning Experience IV

Required

A slide projector to use during a lesson.

A screen to use with the projector.

A group of slides with which to present information in a lesson.

A resource person to role-play a student to whom you are presenting a lesson and to evaluate your performance in using slides to present information.

Optional

A resource person to review the adequacy of your lesson plan.

A teacher skilled in presenting information with slides whom you can observe.

Learning Experience V

Required

An actual teaching situation in which you can present information with filmstrips and slides.

A resource person to assess your competency in presenting information with filmstrips and slides.

General Information

For information about the general organization of each performance-based teacher education (PBTE) module, general procedures for its use, and terminology that is common to all the modules, see About Using the National Center's PBTE Modules on the inside back cover. For more in-depth information on how to use the modules in teacher/trainer education programs, you may wish to refer to three related documents:

The *Student Guide to Using Performance-Based Teacher Education Materials* is designed to help orient preservice and inservice teachers and occupational trainers to PBTE in general and to the PBTE materials.

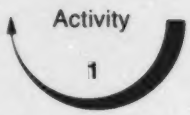
The *Resource Person Guide to Using Performance-Based Teacher Education Materials* can help prospective resource persons to guide and assist preservice and inservice teachers and occupational trainers in the development of professional teaching competencies through use of the PBTE modules. It also includes lists of all the module competencies, as well as a listing of the supplementary resources and the addresses where they can be obtained.

The *Guide to the Implementation of Performance-Based Teacher Education* is designed to help those who will administer the PBTE program. It contains answers to implementation questions, possible solutions to problems, and alternative courses of action.

Learning Experience I

OVERVIEW

After completing the required reading, set up and operate a filmstrip projector.



You will be reading the information sheet, Operating the Filmstrip Projector, pp. 8–11.

You will be setting up and operating a filmstrip projector by completing the exercises specified in the Filmstrip Projector Worksheet, pp. 11–14.

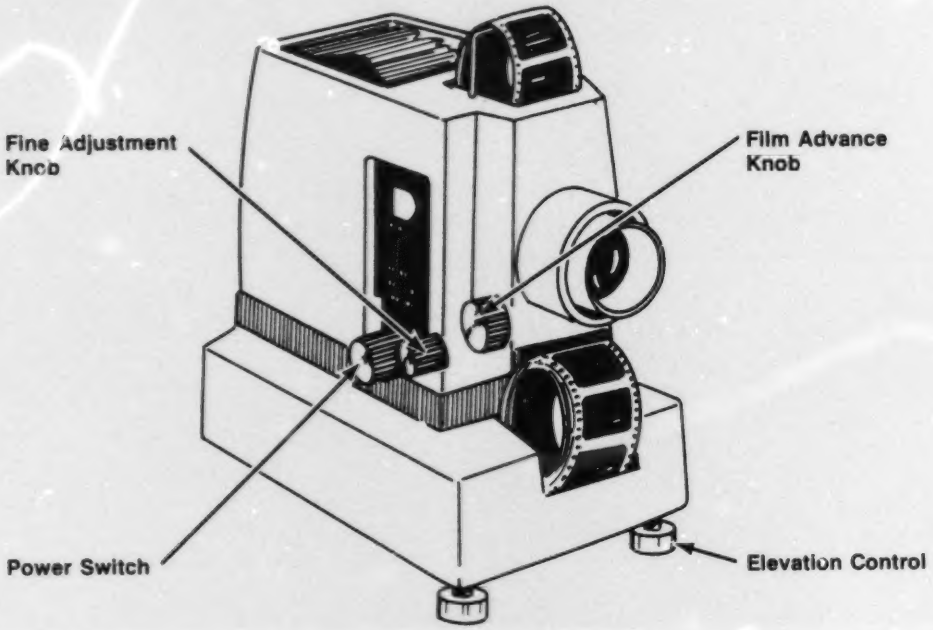
You will be evaluating your competency in setting up and operating a filmstrip projector, using the Filmstrip Projector Operation Checklist, pp. 15–16.

You may wish to locate and meet with a person with expertise in the area of audiovisuals for the purpose of discussing further the uses and operation of filmstrip projectors.

You may wish either to visit an audiovisual equipment dealer or to write to a dealer for catalogs describing the latest types of equipment and supplies available.

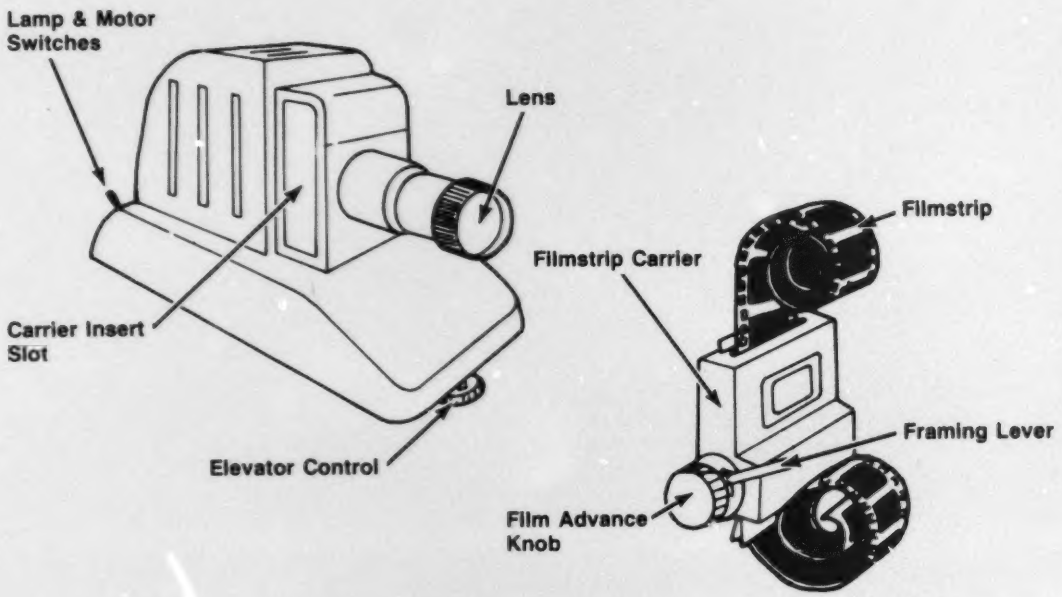
SAMPLE 1

FILMSTRIP PROJECTOR



SAMPLE 2

FILMSTRIP/SLIDE PROJECTOR



Activity 1

For information explaining how to select, set up, and operate the equipment and materials necessary for a presentation that uses a filmstrip projector, read the following information sheet.

OPERATING THE FILMSTRIP PROJECTOR

Projection Principles

The filmstrip projector uses a direct projection system: the light travels in a straight line from the lamp . . . through the filmstrip . . . through the lens . . . to the screen. Sample 1 shows a filmstrip projector. Sample 2 shows a combination filmstrip/slide projector and a filmstrip carrier. The metal carriers—one for filmstrips, one for slides—fit into the carrier insert slot.

Projector Placement

The filmstrip projector should be placed toward the **back** of the room on a high table. Exactly where it is placed depends on a number of variables: room size, darkness of the room, size of group viewing the filmstrip, and screen size and placement.

The projector is placed properly if (1) neither the projector nor the projectionist is blocking students' view; (2) the projected image is well centered on the screen; (3) the projected image is nearly filling the screen; (4) the projected image is clear and well focused; and (5) the projected image is large enough to be seen easily by all viewers.

Projection Materials

For the most part, the filmstrips you will use will be 35mm, single-frame, commercially produced filmstrips. There are a number of sources available to you for locating educational filmstrips, including the following:

- *Index to 35mm Educational Filmstrips*
  National Information Center for Educational Media
  University of Southern California
  Los Angeles, CA 90007
- *Educators Guide to Free Filmstrips*
  Educators Progress Service
  214 Center Street
  Randolf, WI 53956
- *Educational Sound Filmstrip Directory*
  DuKane Corporation, Audio Visual Division
  St. Charles, IL 60174
- National Audio Visual Center
  National Archives and Records Service
  General Services Administration
  Reference Section JJ
  Washington, DC 20409
- Library of Congress: Motion Pictures and Filmstrips
- Instructional materials centers at state departments of education and universities
- Colleagues
- Curriculum guides

These sources, as well as catalogs available from commercial publishers, can provide you with a comprehensive listing of filmstrips relevant to your occupational specialty.

Operation Procedures

The filmstrip projector generally comes in a **carrying case.** After removing the projector from the case, locate the **power cord** and plug it in. If you are using a filmstrip/slide projector, you next need to select the proper **carrier** and slide it into the **carrier insert slot.**

The filmstrip should be threaded into the slot (**film channel**) at the top of the projector or carrier. Hold the filmstrip (touching **only** the outside edges) so that the film comes off the roll counterclockwise and insert it into the slot until the filmstrip engages the **sprocket teeth** of the **film advance mechanism.** Make sure the sprocket teeth are lined up with the holes in the filmstrip edges so that the filmstrip will not be damaged.

Turn on the **motor** and **lamp.** Then, use the film advance knob to advance the filmstrip until a picture appears on the screen. Each time you turn the advance knob until it clicks, the filmstrip will advance one frame. Since it is advanced by hand, you can show each frame for however long students need in order to read captions, take notes, or ask questions.

To enlarge the image on the screen, move the projector away from the screen. To reduce the image on the screen, move the projector closer to the screen. To raise or lower the position of the image on the screen, adjust the **elevator control** at the front of the projector.

To focus the screen image, rotate the **lens** or turn the **focus knob,** depending on the specific projector you are using. If two frames appear on the screen at the same time, the framing can be adjusted with the **framing lever** located next to the film advance knob.

After you have shown the filmstrip, you need to rewind the filmstrip, being careful to handle only the outside edges. You also need to let the machine cool before putting it away. In some machines, you can turn off the machine completely, and the **fan** will continue to run automatically until the lamp (bulb) is cooled. In other machines, you can turn off **just** the lamp. Then, after a few minutes, you can turn off the fan manually. In still other machines, you will have to turn off the projector and then allow it to stand until the lamp cools.

Once the lamp is cooled, readjust the lens and the elevator control to their original positions. Remove the carrier (if necessary), unplug the power cord, and return the projector, the carrier, and the cord to the carrying case.

These are **general** operating procedures. Before attempting to operate any **specific** model of filmstrip projector, it is a good idea to check the operating manual for that model.

Projection Screen

The image projected from a filmstrip projector will fill a 52″ × 70″ screen at a distance from projector to screen of 30′. There are three basic types of screens: matte, glass-beaded, and lenticular.

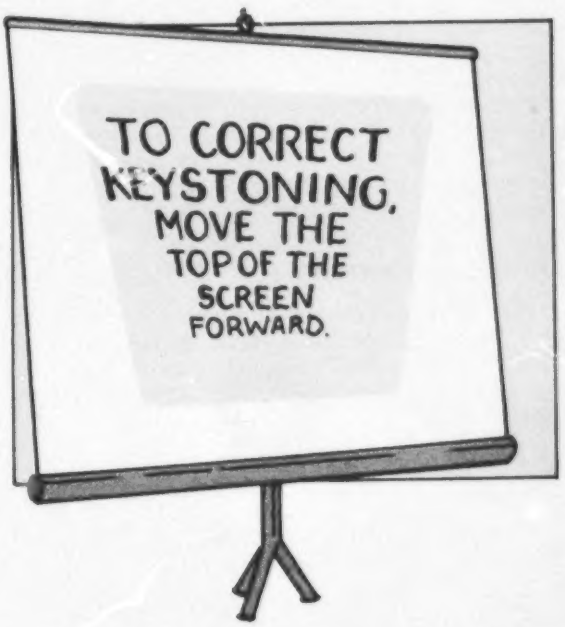
A **matte** screen is like a dull white cloth and will provide a good, bright picture over a wide viewing angle. In other words, persons seated at the center of the room and at either side of the room will see the same bright picture.

A **glass-beaded** screen has a surface covered with tiny glass beads. It gives a much brighter picture than the matte screen, but only to persons seated along the line of projection.

The **lenticular** screen has tiny ridges molded into the surface. It gives a bright image to viewers from all angles.

Since the filmstrip projector is operated in a partially darkened room, any one of these types of screens can be used. If you have more than one type of screen available, consider how your students will be seated and select the screen that will produce the best picture for those viewing angles.

If your projector is going to be pointed at an angle toward the screen, a **keystone effect** will be produced. Keystoning refers to a distorted image in which the top of the image appears larger than the bottom because the top part of the image is farther away from the projector. This can be corrected by moving the top of the screen forward, if possible.



Machine Maintenance

The only part of the projector that is likely to malfunction and need to be repaired by the teacher is the bulb. It is always wise to have a spare bulb handy in case the bulb should burn out.

To change the bulb, wait until it is cooled, unplug the machine, and then remove the burned-out bulb. Use a cloth to handle the new bulb during replacement since fingerprints or other foreign substances on the bulb cause light to be reflected back into the bulb. This increases the heat and shortens the projection life.

Jarring or bumping the bulb while it is hot can also shorten its projection life. The jarring can cause the filaments in a hot bulb to fuse together. If this happens, the bulb will probably burn out the next time the machine is turned on.

The only other maintenance concern of the teacher is keeping the lens clean. The lens can be cleaned with a lens tissue and alcohol or lens fluid.

Other Projector Options

In addition to the standard filmstrip projector, there are also projectors available that combine filmstrip and sound. These projectors generally accommodate both a filmstrip and a synchronized cassette audiotape. They can be used for large-group presentations or, with the addition of earphones, for individual viewing/listening.

Small filmstrip viewers, which combine a screen and projection equipment in one small unit, are also available. These are particularly useful in individualized instructional programs.

The following worksheet is designed to help you become competent in operating the filmstrip projector. No one need see this worksheet unless you choose to show it to them, so do not be reluctant to record what actually happens, right or wrong. The sheet is not intended to show proof that you did everything perfectly the first time. It is intended (1) to help you to organize your knowledge about the operation of filmstrip equipment, (2) to help you apply that knowledge to actual equipment, (3) to point out to you where you have gaps in your knowledge, and (4) to help you determine how to fill those gaps. Completed thoughtfully and thoroughly, this sheet should make an excellent reference for you in the future. Read the directions carefully and then complete each of the 21 exercises.

FILMSTRIP PROJECTOR WORKSHEET

Directions: Locate a filmstrip projector, a screen to use with the projector, a filmstrip, and a measuring device (e.g., ruler, yardstick, tape measure). (If there is filmstrip/tape combination equipment available, you may wish to work with that equipment also, but it is not required.) Arrange for the equipment and materials to be placed in the room in which you will be working with them. Complete each of the following exercises using the actual equipment and materials. Each exercise requires a short response. Please respond fully, but briefly, and make sure you respond to all parts of each item. Do **not** answer simply yes or no; explain your responses. Should you have any difficulty with an exercise, make a note of the problem.

1. What is the make and model of the filmstrip projector with which you are working? Is it for filmstrips only or for both filmstrips and slides?

2. Is there an operating manual? Does it contain any information that is different from or that was not covered in the information sheet? If so, briefly describe that information.

3. What type of table is being used to hold the projector (portability, height, etc.)?

4. Describe the filmstrip that you are using (black & white or color, number of frames, etc.).

5. Describe the type of screen with which you are working (matte, glass-beaded, or lenticular; how it is mounted; what size it is; etc.).

6. Set up the screen for use. Briefly describe any special procedures involved (e.g., "There is a release button that must first be pushed."). If the screen is portable, where have you placed it, and why?

7. What type of lighting are you using in the room? Is this type of lighting appropriate for using the filmstrip projector? Why or why not?

8. Remove the projector from its case and locate the projection lamp. Remove the lamp from the projector and then replace it. Describe the lamp's location and the procedure for removing it.

9. Locate the on/off control on the projector. How many positions does it have, and what are they (fan, lamp, etc.)? What type of control is it (e.g., switch, knob)?

10. Plug the machine in and turn it on. At which positions of the on/off control does the fan operate?

11. Does the projector have a separate filmstrip carrier that must be inserted into the machine? If so, describe the procedure for placing the carrier into the carrier insert slot.

12. Thread the filmstrip into the projector. Describe the threading procedure, the controls involved (e.g., film advance knob), and the location of these controls.

13. Focus the image on the screen. Describe the procedure for focusing.

14. Raise or lower the screen image so that it is centered on the screen. Describe the method for elevating and lowering the image.

15. Locate the framing lever. Adjust it and describe what happens to the screen image when the lever is moved. Then, frame the image properly.

16. Move the projector gradually closer to the screen, refocusing as you get closer. How close to the screen can you get before either (1) you can no longer get the picture into focus, or (2) the material is too small to see?

17. Move the projector gradually away from the screen, refocusing as you get farther away. How far away from the screen can you get before either (1) you can no longer get the picture in focus, or (2) the image is too large for the screen?

18. At what distance (from screen to projector) do you get the best screen image?

19. Are you using the type and size of screen recommended for use with the filmstrip projector according to this module? If not, is this affecting your ability to project a high-quality image? How is the quality affected?

20. Assume you have a class of 20 students. Arrange the seating, the screen, the projector, and the lighting as you would if you were using the projector to present information to that group of 20. Turn on the projector and project the filmstrip. Make any necessary adjustments (e.g., to the focus). **NOTE:** At this point, move to the explanation of Part I in the Feedback that follows.

21. Remove the filmstrip and replace the projector and the filmstrip in their cases. Then, move to the explanation of Part II in the Feedback that follows.

Part I: After you have completed the first 20 items on the worksheet, use Part I of the Filmstrip Projector Operation Checklist, p. 15, to evaluate your work. **Part II:** After you have completed Item 21, use Part II of the Filmstrip Projector Operation Checklist, p. 16, to evaluate your work.

FILMSTRIP PROJECTOR OPERATION CHECKLIST

Name _____

Date _____

Resource Person _____

Directions: Place an X in the YES or NO box to indicate whether each item was performed successfully or not.

Part I

	Yes	No
When you were locating parts on the filmstrip projector, you remembered to:		
1. handle the projection lamp with a soft cloth	☐	☐
2. be careful not to jar the machine (and lamp) while the lamp was hot	☐	☐
When you were threading the filmstrip into the projector, you made sure that:		
3. you handled the filmstrip only by its outside edges	☐	☐
4. the filmstrip holes were properly lined up with the sprocket teeth	☐	☐
The filmstrip projector, screen, and room are arranged for the group of 20 so that:		
5. the projector is at the back of the room	☐	☐
6. the projector is on a high table	☐	☐
7. the projector and the projectionist will not block the view of anyone in the class	☐	☐
8. the projected image is large enough for all viewers to see it clearly	☐	☐
9. the image is well centered on the screen	☐	☐
10. there is no keystoning effect produced	☐	☐
11. the room is nearly dark	☐	☐
The projected image is:		
12. clear and sharp	☐	☐
13. bright	☐	☐
14. well focused	☐	☐

(Return to the worksheet and complete item 21.)

Part II

	Yes	No
Before returning the filmstrip and the projector to their cases, you:		
15. waited for the bulb to cool	☐	☐
16. advanced the filmstrip all the way through the carrier and then rewound it by hand, touching only the outside edges of the filmstrip	☐	☐
17. returned the lens (focus) and elevator control to their original positions	☐	☐
18. removed the filmstrip carrier if necessary	☐	☐
19. unplugged the machine and stored the cord	☐	☐

Level of Performance: All items should receive YES responses. If any item receives a NO response, correct that condition using the actual equipment and materials. If you have trouble correcting the condition, check with your resource person or someone with expertise in the area of audiovisuals.

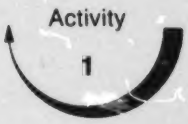
You may wish to contact your resource person or someone else you or your resource person may know of with expertise in the area of audiovisuals. This person could discuss with you special techniques or helpful hints that can be of use to you when you work with the filmstrip projector.

You may wish to check into the latest advancements in filmstrip projectors. You may also wish to identify filmstrips that are currently available. If there is an audiovisual equipment dealership in your vicinity, you may wish to visit there and look over the equipment or to make arrangements to have one of the salespersons talk to you. If you cannot make such a visit, you could write to one or more of the major manufacturers of filmstrips or filmstrip equipment, asking for catalogs.

Learning Experience II

OVERVIEW

After completing the required reading, present information with a filmstrip in a practice situation.



You will be reading the information sheet, Using the Filmstrip Projector as an Instructional Device, pp. 19–21.

You will be selecting an objective in your occupational specialty that lends itself to a filmstrip presentation.

You will be selecting, modifying, or developing a lesson plan designed to achieve that objective using a filmstrip to illustrate the lesson.

You may wish to have your resource person review the adequacy of your plan.

You will be obtaining the necessary filmstrip materials and making arrangements to secure the necessary equipment.

You may wish to arrange through your resource person to visit a classroom in which a teacher experienced in the use of filmstrips is presenting information using filmstrip materials and equipment.

You will be presenting your lesson to your resource person.

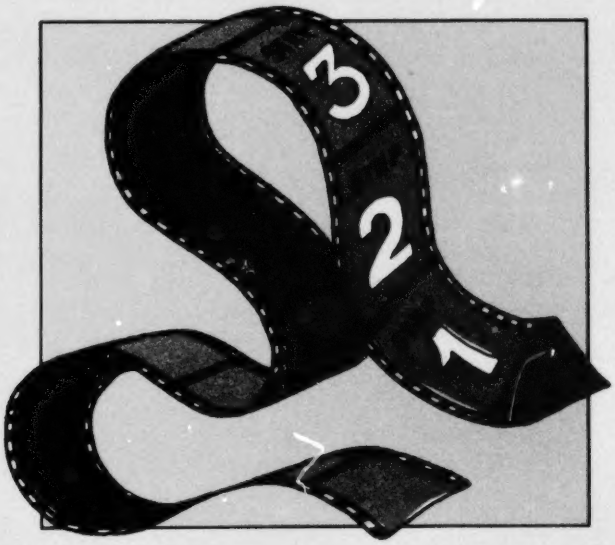
Your competency in presenting information with filmstrip materials and equipment will be evaluated by your resource person, using the Presentation Checklist: Filmstrips, pp. 23–24.

Activity 1

For information describing the general and specific uses of filmstrips to present information and explaining the procedures for their classroom use, read the following information sheet.

USING THE FILMSTRIP PROJECTOR AS AN INSTRUCTIONAL DEVICE

If motion is not an important part of the concept being presented, filmstrips can be very effective learning tools. This is especially true if the concept needs to be presented step by step. By being aware of the advantages and disadvantages associated with using filmstrips and filmstrip projectors, you can easily decide when filmstrips would be an appropriate means of illustrating a particular lesson and of helping you to achieve the lesson objectives.



Advantages

A filmstrip can do many of the same things as a film, but **without the motion.** Through photography or artists' drawings, a filmstrip can show many things:

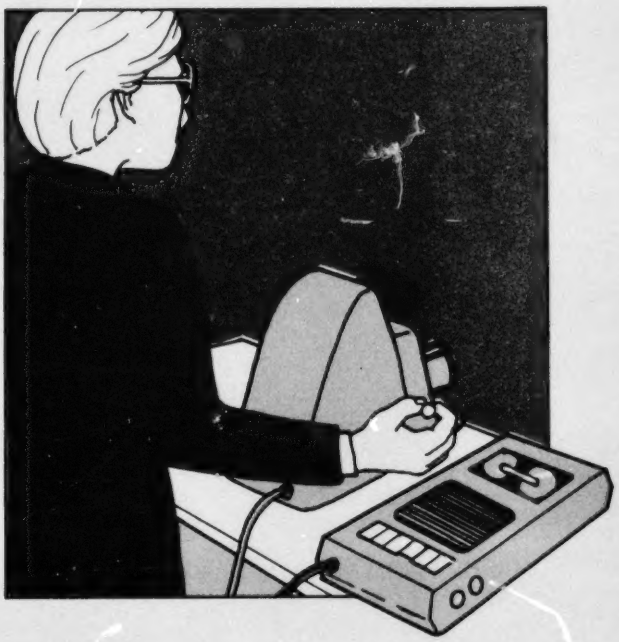
- A close-up of an item not ordinarily visible to the naked eye
- The key steps in a process that ordinarily occurs at too rapid a speed to be seen clearly
- The key steps in a process that ordinarily occurs slowly over a long period of time
- Abstract concepts in a concrete way
- Dangerous skills or operations

Furthermore, like film, the filmstrip is a continuous strip with the frames arranged permanently in a logical, sequential viewing order.

The filmstrip projector is small, lightweight, quite simple to operate, and relatively inexpensive. It can be operated in a room that is not totally darkened. Therefore, it can be used in a normal classroom either for group presentations or individual viewing. Since the projector operates by advancing the filmstrip one frame at a time, usually manually, each frame can be studied or discussed individually for as long as is needed.

Filmstrips are also simple to use. They are easy to store, easy to handle, and easy to thread into the projector. There is a fairly large variety of filmstrips available commercially, covering a wide range of topics. The cost of purchasing filmstrips is usually low enough to be within department, institution, or district budgets. Although the sequence of the filmstrip frames is fixed, it is possible to use only a few selected frames from the strip.

Many filmstrips now are produced with an accompanying audiotape (usually cassette) that explains or discusses the material on each frame of the filmstrip. Some tapes include audible beeps in the narrative to indicate when the user is to advance the



filmstrip. Other tapes include inaudible beeps. Used with filmstrip/tape equipment or with separate equipment that has been "patched" together, the inaudible beeps advance the filmstrip automatically. Some tapes include both options.

With such materials, individual viewing of filmstrip presentations is far simpler and more practical. An additional advantage to using a filmstrip in combination with either a teacher-made or commercially produced tape is that it does not penalize the student who is a poor reader.

Disadvantages

Since a filmstrip has a fixed sequence of frames, it is not as flexible as other media such as slides or transparencies, for instance. It is not easy to show the filmstrip frames in a different order.

With equipment on which each frame of the filmstrip must be advanced by hand, someone must be with the projector. This causes that person to divide his/her attention between viewing the filmstrip and operating the projector. Since each frame can be held on the screen indefinitely for students to study, this does not constitute a major problem for a student operator. If the teacher is operating the projector, it can be a disadvantage since he/she would be at the back of the room with only limited eye contact with students.

When using filmstrips, you will probably have to rely on commercially produced products since filmstrips cannot be easily teacher-made. Commercial filmstrips are usually purchased from the producer rather than rented from a distributor. Therefore, unless there is money in the budget for you to purchase a needed filmstrip or unless it is already available within the institution or district or at a local library, you may not be able to obtain the filmstrip you need.

Another potential problem with commercially produced filmstrips is that they may not always meet the exact objectives of your lesson or the specific needs, interests, and abilities of your students.

If you are using a filmstrip/tape presentation in the classroom, it is not as simple to leave each frame on the screen for as long as students need in order to comprehend the content. The pace of the taped presentation controls the pace of the filmstrip presentation. Of course, the tape can always be stopped if more time is needed for viewing a particular frame. But, this can break the flow of the audio presentation, and it is a bit more complicated in terms of operating procedures.

Finally, although filmstrips can be effective in presenting certain things, they are just not as compelling and motivating as the films and television presentations that today's students are accustomed to. This need not be a disadvantage, however, if they are used well by the teacher.

Classroom Procedures

The procedures you follow in using the filmstrip projector start with the thorough planning and preparation activities that precede the actual showing of the filmstrip. You should **first** develop a unit of instruction[1] and a lesson plan. **Then,** you should select instructional materials that help meet (1) the objectives of the unit and lesson and (2) the needs and interests of students.[2]

Thus, in order for the filmstrip projector to be used effectively, its use must fit the needs of the lesson, and the filmstrips used should do all or at least most of the following:

- Meet the lesson objectives
- Fit students' needs, interests, and abilities
- Provide concrete experiences
- Motivate or arouse interest
- Develop continuity of thought
- Clarify meaning and new vocabulary
- Provide variety in learning
- Save instructional time
- Provide experience not as easily obtained by some other instructional device
- Be up to date
- Be presented at a logical point in the lesson
- Be clear, logical, concise, error-free, and attractive

---

1. To gain skill in developing a unit of instruction, you may wish to refer to Module B-3, *Develop a Unit of Instruction.*

2. To gain skill in determining the needs and interests of students, you may wish to refer to Module B-1, *Determine Needs and Interests of Students.*

If you determine that a filmstrip would, in fact, help to meet the lesson objectives, your first step is to locate likely filmstrips, view them, and evaluate their ability to meet the above criteria. Once you have located an appropriate filmstrip, you can begin to plan how it will fit into your lesson. Your lesson plan needs to answer the following types of questions:

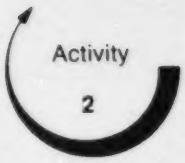
- At what point in the lesson will the filmstrip be shown?
- How are you going to prepare the students for the filmstrip?
- Are you going to show the filmstrip straight through and discuss it afterwards? Show the filmstrip through once (perhaps with a tape) and then reshow it more slowly (without the tape) with time provided to discuss or ask questions as each frame is shown? Show the filmstrip slowly the first time through, allowing time for questions and discussion?
- Are students going to read the printed commentary written on each frame aloud or to themselves? Is the teacher going to read it? Will the filmstrip be accompanied by a tape?
- What method of summary are you going to use?
- How are you going to evaluate what the students have learned from the filmstrip?
- In what ways are you going to get feedback on the students' evaluation of the filmstrip?
- Are there any follow-up activities you can plan that grow out of the filmstrip presentation?

Some filmstrips are accompanied by teachers guides or programmed instruction. Before you use such materials, either with a class or for individual study purposes, you need to make sure that they do, in fact, meet the needs of your lesson objectives and your students. The written materials accompanying filmstrips may be of value in helping you to prepare your own study guides or worksheets. These can be used in preparing students for a filmstrip, as a basis for class discussion, as a follow-up activity, or to direct individual viewing.

Before using the projector in the classroom, you should have (1) reserved the filmstrip screen (if necessary) and projector well in advance for the time you will need to use them; (2) arranged the physical setting of the room on the day of the presentation so that all students will be able to see the projected image clearly, (3) checked and focused the projector, and (4) made sure you had a spare bulb available.

When you reach the point in your lesson at which the filmstrip is to be shown, prepare the students for the filmstrip. You can do this by raising questions, pointing out key items to look for, discussing vocabulary, indicating errors or omissions contained in the filmstrip, passing out study guides, and so on. Then, show the filmstrip according to your lesson plans.

Unless the equipment is in the way, it is best to wait until after you have completed the lesson (e.g., discussion, evaluation, summarization, follow-up) before putting the equipment away. In this way, you can be sure that the bulb has cooled, and the care of the equipment will not interfere with the flow of the lesson.



Select a student performance objective in your occupational specialty that could be achieved, at least partially, by using a filmstrip. (In a real-world situation, you start with an objective and then select the most appropriate materials and teaching methods. In this practice situation, however, you need to select an objective that lends itself to using a filmstrip.)

Prepare a detailed lesson plan that includes the use of a filmstrip. In your plan, explain what filmstrip will be needed, how it will be used, and when. Instead of developing a lesson plan, you may select a lesson plan that you have developed previously and adapt that plan so that it includes the use of a filmstrip.

You may wish to have your resource person review the adequacy of your plan. He/she could use the Teacher Performance Assessment Form in Module B–4, *Develop a Lesson Plan*, as a guide.

Based on your lesson plan, select and obtain the filmstrip you will need to make your presentation. Also, arrange to have a filmstrip projector and a screen available when you make your presentation.

Before presenting your lesson, you may wish to arrange through your resource person to observe a lesson involving the use of a filmstrip that is being presented by a vocational teacher in your service area who is experienced in using filmstrips.

In a simulated classroom situation, present your lesson to your resource person. Your resource person will serve two functions: (1) he/she will role-play a student to whom you are presenting the lesson, and (2) he/she will evaluate your performance.

Give your resource person the Presentation Checklist: Filmstrips, pp. 23–24, before making your presentation in order to ensure that he/she knows what to look for in your lesson.

PRESENTATION CHECKLIST: FILMSTRIPS

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

LEVEL OF PERFORMANCE

	N/A	No	Partial	Full
The teacher:				
1. arranged the physical setting in advance in a way that would ensure that all students could both see and hear the presentation clearly	☐	☐	☐	☐
2. had equipment and materials assembled in advance	☐	☐	☐	☐
3. set up the equipment and threaded the filmstrip according to manufacturer's recommendations	☐	☐	☐	☐
4. checked and focused the equipment in advance	☐	☐	☐	☐
5. had a spare bulb available	☐	☐	☐	☐
6. projected the image on the screen clearly and accurately so that it met the following criteria:				
a. no keystoning effect	☐	☐	☐	☐
b. well focused	☐	☐	☐	☐
c. well centered on the screen	☐	☐	☐	☐
d. readable	☐	☐	☐	☐
7. used a filmstrip that met the following criteria:				
a. content was at students' comprehension level	☐	☐	☐	☐
b. content of the filmstrip was of good quality in terms of artwork, printing, color, etc.	☐	☐	☐	☐
c. filmstrip aided in meeting the objectives of the lesson	☐	☐	☐	☐
8. prepared students adequately for the filmstrip (e.g., raised key questions, defined terms)	☐	☐	☐	☐
9. presented the filmstrip at a logical point in the lesson	☐	☐	☐	☐
10. paced the presentation of the filmstrip according to the needs of the lesson and the students	☐	☐	☐	☐
11. clearly emphasized points being presented visually, either by class discussion or by having someone read subtitles	☐	☐	☐	☐

	N/A	No	Partial	Full
12. summarized (or had class members summarize) the content of the filmstrip	☐	☐	☐	☐
13. obtained student feedback on students' understanding of the filmstrip	☐	☐	☐	☐
14. obtained student feedback on students' evaluation of the filmstrip	☐	☐	☐	☐

Level of Performance: All items must receive FULL or N/A responses. If any item receives a NO or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

Learning Experience III

OVERVIEW

After completing the required reading, set up and operate a slide projector.

You will be reading the information sheet, Operating the Slide Projector, pp. 26–28.

You will be setting up and operating a slide projector by completing the exercises specified in the Slide Projector Worksheet, pp. 29–34.

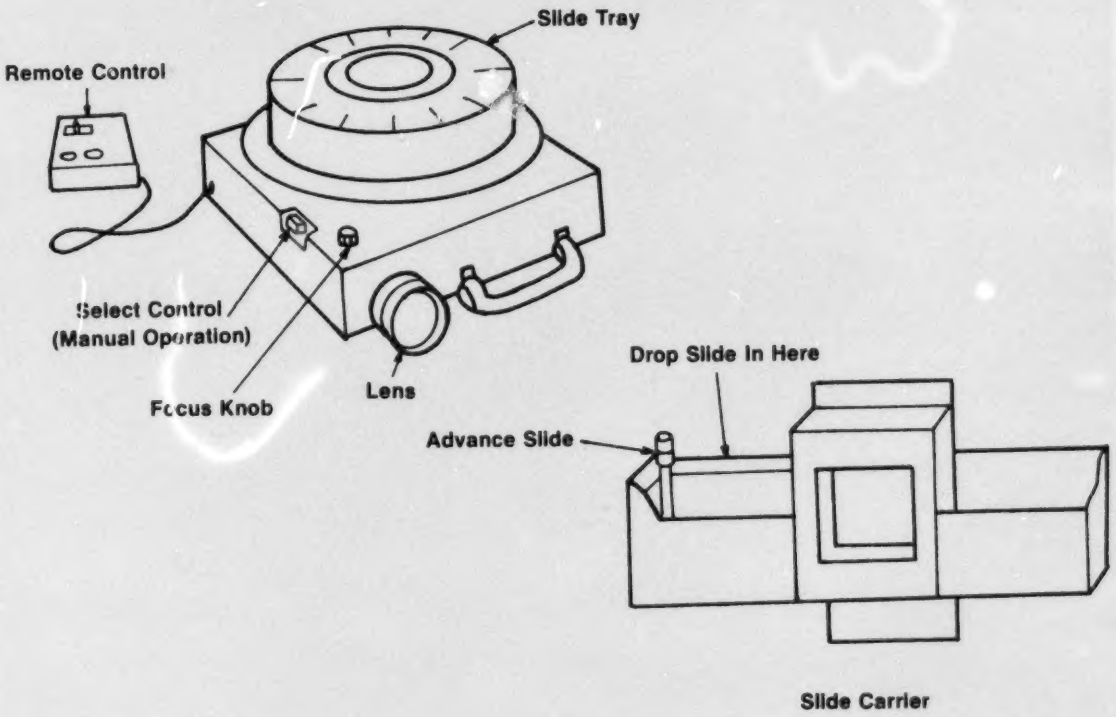
You will be evaluating your competency in setting up and operating a slide projector, using the Slide Projector Operation Checklist, pp. 35–36.

You may wish to locate and meet with a person with expertise in the area of audiovisuals for the purpose of discussing further the uses and operation of slide projectors.

You may wish to either visit an audiovisual equipment dealer or write to a dealer for catalogs describing the latest types of equipment and supplies available.

SAMPLE 3

SLIDE EQUIPMENT



Activity 1

For information explaining how to select, set up, and operate the equipment and materials necessary for a presentation that uses a slide projector, read the following information sheet.

OPERATING THE SLIDE PROJECTOR

Projection Principles

The slide projector also uses a direct projection system: the light travels in a straight line from the lamp . . . through the slide . . . through the lens . . . to the screen. Sample 3 shows one of the most popular slide projectors—the carousel projector with a circular slide tray (magazine)—and the slide carrier that fits into the combination filmstrip/slide projector shown in sample 2 on p. 8.

Projector Placement

As with the filmstrip projector, the slide projector should be placed toward the back of the room on a high table. The projector is placed properly if (1) neither the projector nor the projectionist is blocking students' view; (2) the projected image is well centered on the screen; (3) the projected image is nearly filling the screen; (4) the projected image is clear and well focused; and (5) the projected image is large enough to be seen easily by all viewers.

Projection Materials

For the most part, the slides you will use will probably be 2″ × 2″ teacher-made or locally produced slides. The 2″ × 2″ refers to the overall dimensions of the slide, including the cardboard frame. The actual film size is .9″ × 1.3″. With a 35mm camera and color film, any teacher can take pictures of persons, places, and things specific to his/her own occupational specialty, and these can be developed as slides.

There are a number of sources of teacher-made and commercially produced slides in the area of education, including the following:

- Motion Picture and Educational Markets Division
  Eastman Kodak Co.
  Rochester, NY 14650
- National Audiovisual Center
  National Archives and Records Service
  General Services Administration
  Reference Section JJ
  Washington, DC 20409
- University-based instructional materials centers
- Colleagues

By reviewing materials and catalogs available from these sources or by reviewing curriculum guides in your area, you can identify slides that would be appropriate to your lessons.

Operation Procedures

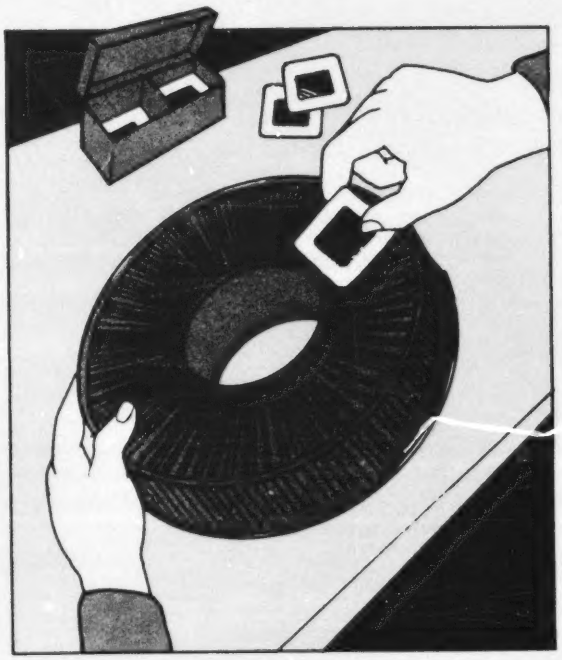
There are a number of different slide projectors available today. Although the projection principles are the same for each projector, the operation procedures may vary slightly from projector to projector.

The projector may be a simple filmstrip/slide projector with a **slide carrier** (see sample 2, p. 8), a projector equipped for use with a long **rectangular slide tray** (magazine), a carousel projector with a **circular slide tray** (magazine) (see sample 3), or a projector with a circular slide tray that is placed on its side beside the projector.

The projector may be equipped for **remote control** operation, it may be capable of only **manual** operation, or it may be equipped for both. Newer slide projectors are set up to be operated in combination with tape recorders for slide/tape presentations. The tape is recorded with inaudible beeps (sync pulses) that move the slides along to synchronize with the information being presented on the tape.

If you are going to be working with a filmstrip/slide projector, you will be handling loose slides that you will have to place in the carrier one at a time. These should be arranged in order in advance. With some carriers, you place the slide (always upside down) into the carrier, push the carrier in to show the slide, and then pull the carrier back out to remove the slide and replace it with the next slide.

With other carriers, you place a slide in on the right-hand side of the carrier, and when you push it in to show it, there is a place now on the left-hand side to insert a slide. When you push in the left-hand side, you are showing the second slide while being able to remove the first slide and replace it with the third in the slide slot to the right. This latter system allows for a more continuous presentation.



If you are going to be working with a projector that is equipped for use with slide trays, your slide show can be set up in advance. The slides are simply placed, again upside down, into the slide tray in the proper order. The tray is then inserted into (or onto) the projector according to directions and advanced manually to the first slide. To advance the slides during the presentation, you simply push a button each time you wish to advance a slide.

Whichever projector you are using, the first step is to remove the projector from its **case,** if necessary, and to locate the **power cord** and plug it in. In some projectors, the cord is located in a storage compartment within the projector itself. Next, plug in the remote control if there is one.

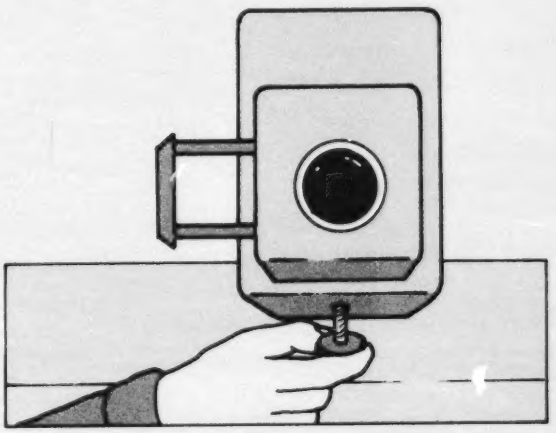
If you have a filmstrip/slide projector, insert the carrier and the first slide; then turn on the **motor** and **lamp.** If you have a projector with a slide tray, turn on the machine first, and then insert and position the slide tray so that the first slide is showing.

To enlarge the image on the screen, move the projector away from the screen. To reduce the image on the screen, move the projector closer to the screen. To raise or lower the position of the image on the screen, adjust the **extendable legs** or the **elevator control** at the front of the machine. To focus the screen image, rotate the **lens** or turn the **focus knob,** depending on the specific projector you are using.

After you are through with your slide presentation, you need to let the machine cool before putting it away. In some machines, you can turn off the machine completely, and the **fan** will continue to run automatically until the lamp (bulb) is cooled. In other machines, you can turn off **just** the lamp. Then, after a few minutes, you can turn off the fan manually. In still other machines, turning off the lamp turns off the fan also. For these machines, you will have to allow the projector to stand until the lamp cools.

Once the lamp is cooled, return the projector to its original state. Depending on which type of projector you are using, this means readjusting the lens, lowering the front of the projector using the elevator control or extendable legs, removing the carrier (if necessary), removing the slide tray, unplugging the power cord and returning it to its storage area, and unplugging the remote control.

These are **general** operating procedures. Before attempting to operate any **specific** model of slide projector, it is a good idea to check the operating manual for that model.



Projection Screen

In a normal-sized classroom, it is best to use a 70" × 70" square screen with the slide projector. The film image of a slide is not square; it is .9" × 1.3". However, a slide may be projected with the 1.3" side placed vertically or horizontally. To accommodate either placement, the square screen is best.

Since the slide projector is used in a partially darkened room, the type of screen you use—matte, glass-beaded, or lenticular—will depend on how your students are seated. For information on the different types of screens and on the keystone effect, refer to p. 10 of the information sheet, Operating the Filmstrip Projector.

Machine Maintenance

The responsibilities of the teacher in maintaining the slide projector are the same as those for the filmstrip projector. This information may be found on p. 10 of the information sheet, Operating the Filmstrip Projector.

The following worksheet is designed to help you become competent in operating the slide projector. No one need see this worksheet unless you choose to show it to them, so do not be reluctant to record what actually happens, right or wrong. The sheet is not intended to show proof that you did everything perfectly the first time. It is intended (1) to help you to organize your knowledge about the operation of the slide projector, (2) to help you apply that knowledge to actual equipment, (3) to point out to you where you have gaps in your knowledge, and, (4) to help you determine how to fill those gaps. Completed thoughtfully and thoroughly, this sheet should make an excellent reference for you in the future. Read the directions carefully and then complete each of the 24 exercises.

SLIDE PROJECTOR WORKSHEET

Directions: Locate at least one of the following types of slide projectors: filmstrip/slide projector, rectangular-magazine-type slide projector, carousel projector, or standard slide projector. (If there is slide/tape combination equipment available, you may wish to work with that equipment also, but it is not required.) Also, locate a screen to use with the projector, a group of slides, and a measuring device (e.g., ruler, yardstick, tape measure). Arrange for the equipment and materials to be placed in the room in which you will be working with them. Complete each of the following exercises using the actual equipment and materials. Each exercise requires a short response. Please respond fully, but briefly, and make sure you respond to all parts of each item. Do **not** answer simply yes or no; explain your responses. Should you have any difficulty with an exercise, make a note of that problem.

1. What is the make, model, and type of slide projector with which you are working?

2. Is there an operating manual? Does it contain any information that is different from or that was not covered in the information sheet? If so, briefly describe that information.

3. What type of table is being used to hold the projector (portability, height, etc.)?

4. Describe the slides that you are using (artwork or photos, color or black & white, number of slides, etc.).

5. Describe the type of screen with which you are working (matte, glass-beaded, or lenticular; how it is mounted; what size it is; etc.).

6. Set up the screen for use. Briefly describe any special procedures involved (e.g., "There is a release button that must first be pushed.") If the screen is portable, where have you placed it, and why?

7. What type of lighting are you using in the room? Is this type of lighting appropriate for using the slide projector? Why or why not?

8. Remove the projector from its case and locate the projection lamp. Remove the lamp from the projector and then replace it. Describe the lamp's location and the procedure for removing it.

9. Locate the on/off control on the projector. How many positions does it have, and what are they (fan, lamp, etc.)? What type of control is it (e.g., switch, knob)?

10. Plug the machine in and turn it on. At which positions of the on/off control does the fan operate?

11. Is there a remote control device? If so, describe how to attach it to the projector, what functions it controls, and how to operate it.

12. Is there a timer for automatically advancing the slides? What lengths of time intervals does the timer allow? Describe how to operate it.

13. Does the projector have a separate slide carrier or slide tray attachment? If so, describe how to attach the slide tray or slide carrier to the projector.

14. Using the group of slides you are working with, load them into the projector, carrier, or slide tray. Describe the procedure for loading the slides and for advancing the slides once they are loaded.

15. Draw a rough sketch showing how each slide should be loaded so that the image is projected properly (right side up, etc.) onto the screen.

16. With a slide in place, focus the image on the screen. Describe the procedure for focusing.

17. Raise or lower the screen image so that it is centered on the screen. Describe the method for elevating and lowering the image.

18. Locate the framing lever. Adjust it and describe what happens to the screen image when the lever is moved. Then, frame the image properly.

19. Move the projector gradually closer to the screen, refocusing as you get closer. How close to the screen can you get before either (1) you can no longer get the picture in focus, or (2) the material is too small to see?

20. Move the projector gradually away from the screen, refocusing as you get farther away. How far away from the screen can you get before either (1) you can no longer get the picture in focus, or (2) the image is too large for the screen?

21. At what distance (from the screen to projector) do you get the best screen image?

22. Are you using the type and size of screen recommended for use with the slide projector according to this module? If not, is this affecting your ability to project a high-quality image? How is the quality affected?

23. Assume you have a class of 20 students. Arrange the seating, the screen, the projector, and the lighting as you would if you were using the projector to present information to that group of 20. Turn on the projector and project a slide. Make any necessary adjustments (e.g., to the focus). **NOTE:** At this point, move to the explanation of Part I in the Feedback that follows.

24. Remove the slides and replace the projector and loose slides in their cases. Then, move to the explanation of Part II in the Feedback that follows.

Part I: After you have completed the first 23 items on the worksheet, use Part I of the Slide Projector Operation Checklist, p. 35, to evaluate your work.
Part II: After you have completed Item 24, use Part II of the Slide Projector Operation Checklist, p. 35, to evaluate your work.

SLIDE PROJECTOR OPERATION CHECKLIST

Name _____

Date _____

Resource Person _____

Directions: Place an X in the YES or NO box to indicate whether each item was performed successfully or not.

	Yes	No
Part I		
When you were locating parts on the slide projector, you remembered to:		
1. handle the projection lamp with a soft cloth	☐	☐
2. be careful not to jar the machine (and lamp) while the lamp was hot	☐	☐
When you were loading the slides into the projector, slide carrier, or slide tray, you made sure that:		
3. you handled each slide only by the frame and not on the film area	☐	☐
The slide projector, screen, and room are arranged for the group of 20 so that:		
4. the projector is at the back of the room	☐	☐
5. the projector is on a high table	☐	☐
6. the projector and the projectionist will not block the view of anyone in the class	☐	☐
7. the projected image is large enough for all viewers to see it clearly	☐	☐
8. the image is well centered on the screen	☐	☐
9. there is no keystoning effect produced	☐	☐
10. the room is nearly dark	☐	☐
The projected image is:		
11. clear and sharp	☐	☐
12. bright	☐	☐
13. well focused	☐	☐

(Return to the worksheet and complete Item 24.)

	Yes	No
Part II		
Before returning the slides and the projector to their cases, you:		
14. waited for the bulb to cool	☐	☐
15. returned the lens (focus) and elevator control to their original positions	☐	☐
16. removed the slide carrier or slide tray	☐	☐
17. unplugged the machine and stored the cord	☐	☐
18. unplugged the remote control and stored it if necessary	☐	☐
19. handled slides only by the frame and not on the film area	☐	☐

Level of Performance: All items should receive YES responses. If any item receives a NO response, correct that condition using the actual equipment and materials. If you have trouble correcting the condition, check with your resource person or someone with expertise in the area of audiovisuals.

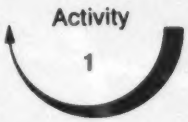
You may wish to contact your resource person or someone else you or your resource person may know of with expertise in the area of audiovisuals. This person could discuss with you special techniques or helpful hints that can be of use to you when you work with the slide projector.

You may wish to check into the latest advancements in slide projectors and the production of slides. If there is an audiovisual equipment dealership or photography store (or photography department on campus) available in your vicinity, you may wish to visit there and look over the equipment or to make arrangements to have one of the representatives talk to you. If you cannot make such a visit, you could write to one or more of the major manufacturers of slide cameras or slide projectors, asking for catalogs.

Learning Experience IV

OVERVIEW

After completing the required reading, present information with slides in a practice situation.



You will be reading the information sheet, Using the Slide Projector as an Instructional Device, pp. 39–41.

You will be selecting an objective in your occupational specialty that lends itself to a slide presentation.

You will be selecting, modifying, or developing a lesson plan designed to achieve that objective using slides to illustrate the lesson.

You may wish to have your resource person review the adequacy of your plan.

You will be obtaining or preparing the necessary slides and making arrangements to secure the necessary equipment.

You may wish to arrange through your resource person to visit a classroom in which a teacher experienced in the use of slides is presenting information using slide materials and equipment.

You will be presenting your lesson to your resource person.

Your competency in presenting information with slide materials and equipment will be evaluated by your resource person, using the Presentation Checklist: Slides, pp. 43–44.

Activity 1

For information describing the general and specific uses of slides to present information and explaining the procedures for their classroom use, read the following information sheet.

USING THE SLIDE PROJECTOR AS AN INSTRUCTIONAL DEVICE

Slides and filmstrips perform much the same functions in terms of their ability to explain, illustrate, or clarify what you are trying to teach. A slide presentation and a filmstrip presentation are both based on a series of still pictures; movement is not shown. However, while slides have many of the same advantages as filmstrips, many of the disadvantages associated with filmstrips have been eliminated with slides.

Advantages

Like the filmstrip, slides can do many of the same things as a film, but without the motion. Slides, too, can be used to show close-ups of very small items. They can be used to highlight key steps in processes that are hazardous or that occur too rapidly or over too long a period of time to be viewed easily by students in a classroom. Also, they can be used to illustrate abstract concepts.

Unlike filmstrips, however, slides can be teacher-made. Slide cameras are readily available, reasonably inexpensive, and fairly simple to operate. The film can be processed into slides for a moderate price at the local camera store. This means that, with access to a slide camera and with a little know-how, any classroom teacher can produce slides to meet his/her own needs.

Slide projectors are small, lightweight, quite simple to operate (especially those that hold slide trays), and relatively inexpensive. Most newer projectors include a remote control that allows you to sit where you can best view both students and the screen, while still being able to advance the slides yourself. Some projectors even come with a timer that will advance the slides automatically at preset intervals.

Slide projectors can be operated in a room that is not totally darkened; therefore, they can be used in a normal classroom, either for group presentations or individual viewing. Since even those projectors with automatic controls can be operated manually, each slide can be projected for as long as is needed for the class to study or discuss it.

Slides are easy to use, store, and handle, especially if you are using a projector that holds slide trays. Once the slides are properly inserted into a slide tray, you don't have to worry about showing slides out of sequence. In addition, there is little chance of losing a slide, and you do not have to handle or manipulate the slides at all during the presentation.

Since each slide is an individual unit, the order of presentation is not fixed as it is with the filmstrip. You can easily change the order, add slides, eliminate slides, or replace slides of outdated material with new slides.

Slides can be produced with accompanying audiotapes (usually cassettes) that explain or discuss the material on each slide in a sequence. These slide/tapes can be used very effectively with groups or on an individual viewing basis. The tapes can be produced with audible beeps to indicate when the slides are to be advanced or with inaudible beeps that trigger the advancement of the slides automatically.

Slide/tape equipment is now available that both plays the cassette and projects the slides. When a cassette with an inaudible beep is inserted in the equipment, the beep automatically advances the slides in sequence with the taped presentation.

Slide/tape presentations are ideally suited for individual viewing since the equipment and materials are easy for students to work with, and students who might need assistance in reading written material are getting the information orally and visually instead.

Disadvantages

Aside from the limitations inherent in the older types of projectors that require you to insert the slides manually one at a time, there are few disadvantages associated with using slides. As with filmstrips, slides are not as dynamic as films or television presentations, and slide/tape presentations are less flexible than using slides alone. However, neither of these concerns is major, and neither will become a disadvantage if the equipment and materials are used sensibly and properly.

Classroom Procedures

In order for the slide projector to be used effectively, its use must fit the needs of the lesson, and the materials projected must meet the criteria for high-quality materials. These classroom procedures are nearly identical to those described for the filmstrip projector on pp. 20–21.

Two additional points need to be made that are specific to slides and slide projectors. Since the slides often are teacher-made, it is sometimes necessary to do more than just "locate" appropriate slides. Sometimes, you must decide well in advance what slides will be needed so that you can take pictures to fit those needs. Second, one additional question you might wish to ask in planning a slide presentation is, "Am I going to show the slides straight through, or am I going to use the slides (or just a few slides) to illustrate key points periodically throughout the lesson?"

If you plan to use the latter technique, there are some special procedures involved. With the overhead projector, projecting visuals at intervals in a presentation is simple because you are already at the front of the room and the room is fully lighted. With the slide projector, the equipment is at the back of the room and the room lights must be off. Thus, each time you use a slide, the lights must be turned off and someone must turn on the projector and advance the slide. Each time you wish to go on with a part of the presentation that is not illustrated with slides, the lights must be turned on, and someone must turn off the projector.

If you try to do all these manipulations, you'll probably end up running around the room a lot. This is distracting to students and does not lend itself to a very smooth or unified presentation. If students are asked to control the lights and equipment, you are asking them also to divide their attention between the presentation and equipment operation. Unless your school has a media crew whose members could come in to assist in this type of presentation, it would probably be best to use some other instructional technique instead.

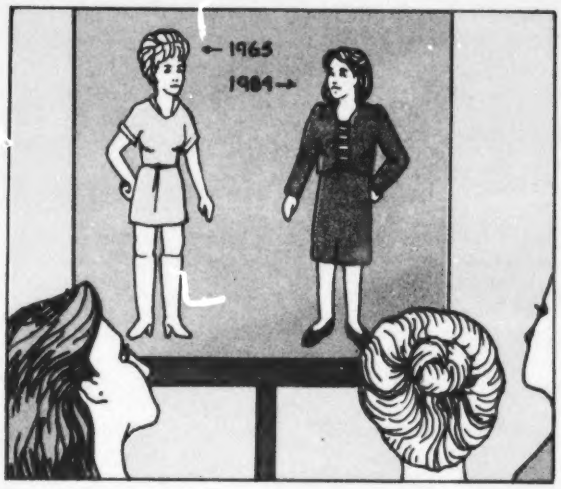
One technique that can be used to minimize the manipulations required is to place a slide-sized piece of cardboard in the slide tray at each point at which you wish to pause. This eliminates the need to turn off the projector. However, the room lights still need to be turned on and off at each pause.

Specific Applications

In English classes, a ten-year-old grammar book is probably still up to date and accurate. Not so in vocational-technical classes. Last year's fashions are probably not the same as this year's fashions. The corn planted ten years ago may have been made obsolete by a new hybrid. A recently invented piece of equipment may change the shop practices described in a ten-year-old textbook.

Vocational-technical education changes as the real world changes. Thus, slides are of special value to

the vocational-technical teacher. The home economics teacher can update his/her curricular materials each year with new slides of current fashion designs. Slides can be shown of actual children, some showing the physical signs associated with well-balanced diets, some showing signs of malnutrition. Various periods of home furnishings or house designs can also be illustrated by slides.



The health occupations teacher can use slides taken in hospitals or medical offices to illustrate modern equipment or current practices. Slides of persons suffering from actual injuries, poor teeth, or specific diseases can help health occupations students learn to recognize symptoms.

The agriculture teacher can use slides to aid students in recognizing and identifying breeds of livestock, types of soil, or various kinds of insects, plants, or tools. The cosmetology teacher can use slides to illustrate various hairstyles that are currently popular or to show how different hairstyles can change the appearance of the same person.

Teachers of wood or metal shop can use slides to illustrate new equipment or tools. They may also use slides to show different views of a completed project or examples of model projects that have been completed. Slides can be used to show students the stages involved in erecting a building using an actual example. All vocational-technical teachers can use slides to take the place of an actual field trip if such a trip is not possible.

Select a student performance objective in your occupational specialty that could be achieved, at least partially, by using slides. (In a real-world situation, you start with an objective and then select the most appropriate materials and teaching methods. In this practice situation, however, you need to select an objective that lends itself to using slides.)

Prepare a detailed lesson plan that includes the use of slides. In your plan, explain what slides will be needed, how they will be used, and when. Instead of developing a lesson plan, you may select a lesson plan that you have developed previously and adapt that plan so that it includes the use of slides.

You may wish to have your resource person review the adequacy of your plan. He/she could use the Teacher Performance Assessment Form in Module B–4, *Develop a Lesson Plan*, as a guide.

Based on your lesson plan, select, obtain, or prepare the slides you will need to make your presentation. Also, arrange to have a slide projector and a screen available when you make your presentation.

Before presenting your lesson, you may wish to arrange through your resource person to observe a lesson involving the use of slides that is being presented by a vocational teacher in your service area who is experienced in using (or perhaps preparing) slides.

In a simulated classroom situation, present your lesson to your resource person. Your resource person will serve two functions: (1) he/she will role-play a student to whom you are presenting the lesson, and (2) he/she will evaluate your performance.

Give your resource person the Presentation Checklist: Slides, pp. 43–44, before making your presentation in order to ensure that he/she knows what to look for in your lesson.

PRESENTATION CHECKLIST: SLIDES

Directions: Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

	LEVEL OF PERFORMANCE			
The teacher:	N/A	No	Partial	Full
1. arranged the physical setting in advance in a way that would ensure that all students could both see and hear the presentation clearly	☐	☐	☐	☐
2. had equipment and materials assembled in advance	☐	☐	☐	☐
3. set up the equipment and loaded the slides according to manufacturer's recommendations	☐	☐	☐	☐
4. checked and focused the equipment in advance	☐	☐	☐	☐
5. had a spare bulb available	☐	☐	☐	☐
6. projected the image on the screen clearly and accurately so that it met the following criteria:				
a. no keystoning effect	☐	☐	☐	☐
b. well focused	☐	☐	☐	☐
c. well centered on the screen	☐	☐	☐	☐
d. readable	☐	☐	☐	☐
7. used slides that met the following criteria:				
a. content of the slides was simple	☐	☐	☐	☐
b. content was at students' comprehension level	☐	☐	☐	☐
c. content of the slides was of good quality in terms of color, clarity, contrast, etc.	☐	☐	☐	☐
d. slides aided in meeting the objectives of the lesson	☐	☐	☐	☐
8. prepared students adequately for the slide presentation (e.g., raised key questions, defined terms)	☐	☐	☐	☐
9. presented slides in a logical sequence	☐	☐	☐	☐
10. presented the slides at a logical point in the lesson	☐	☐	☐	☐
11. paced the slide presentation according to the needs of the lesson and of the students	☐	☐	☐	☐

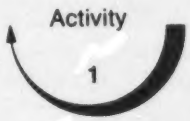
	N/A	No	Partial	Full
12. clearly emphasized and explained points being made visually ...	☐	☐	☐	☐
13. used the on/off switch to control attention (if appropriate)	☐	☐	☐	☐
14. summarized (or had class members summarize) the slide presentation	☐	☐	☐	☐
15. obtained student feedback on students' understanding of the slide presentation	☐	☐	☐	☐
16. obtained student feedback on students' evaluation of the slide presentation	☐	☐	☐	☐

Level of Performance: All items must receive FULL or N/A responses. If any item receives a NO or PARTIAL response, the teacher and the resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

Learning Experience V

FINAL EXPERIENCE

In an **actual teaching situation,*** present information with filmstrips and slides.



As you plan your lessons, decide when filmstrips and slides could be used effectively to aid you in meeting the lesson objectives. Based on those decisions, present information with filmstrips and slides. This will include—

- deciding whether you wish to teach a **single lesson** that incorporates the use of both techniques or **two lessons,** one using a filmstrip and one using slides
- selecting, modifying, or developing one or more lesson plans that include the use of these techniques
- selecting, obtaining, or preparing the necessary materials
- securing the necessary equipment
- presenting the lesson(s) to the class

NOTE: Your resource person may want you to submit your written lesson plan(s) to him/her for evaluation before you present your lesson(s). It may be helpful for your resource person to use the TPAF from Module B-4, *Develop a Lesson Plan*, to guide his/her evaluation.

Arrange in advance to have your resource person observe your lesson presentation(s).

Your total competency will be assessed by your resource person, using the Teacher Performance Assessment Form, pp. 47–49.

Based upon the criteria specified in this assessment instrument, your resource person will determine whether you are competent in presenting information with filmstrips and slides.

*For a definition of "actual teaching situation," see the inside back cover.

NOTES

TEACHER PERFORMANCE ASSESSMENT FORM

Present Information with Filmstrips and Slides (C–24)

Name _____

Date _____

Resource Person _____

Directions: Indicate the level of the teacher's accomplishment by placing an X in the appropriate box under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Filmstrips

The teacher:

	LEVEL OF PERFORMANCE					
	N/A	None	Poor	Fair	Good	Excellent
1. arranged the physical setting in advance in a way that would ensure that all students could both see and hear the presentation	☐	☐	☐	☐	☐	☐
2. had equipment and materials assembled in advance	☐	☐	☐	☐	☐	☐
3. set up the equipment and threaded the filmstrip according to manufacturer's recommendations	☐	☐	☐	☐	☐	☐
4. checked and focused the equipment in advance	☐	☐	☐	☐	☐	☐
5. had a spare bulb available	☐	☐	☐	☐	☐	☐
6. projected the image on the screen clearly and accurately so that it met the following criteria:						
a. no keystoning effect	☐	☐	☐	☐	☐	☐
b. well focused	☐	☐	☐	☐	☐	☐
c. well centered on the screen	☐	☐	☐	☐	☐	☐
d. readable	☐	☐	☐	☐	☐	☐
7. used a filmstrip that met the following criteria:						
a. content was at students' comprehension level	☐	☐	☐	☐	☐	☐
b. content of the filmstrip was of good quality in terms of artwork, printing, color, etc.	☐	☐	☐	☐	☐	☐
c. filmstrip aided in meeting the objectives of the lesson	☐	☐	☐	☐	☐	☐
8. prepared students adequately for the filmstrip (e.g., raised key questions, defined terms)	☐	☐	☐	☐	☐	☐
9. presented the filmstrip at a logical point in the lesson	☐	☐	☐	☐	☐	☐
10. paced the presentation of the filmstrip according to the needs of the lesson and the students	☐	☐	☐	☐	☐	☐

	N/A	None	Poor	Fair	Good	Excellent
11. clearly emphasized points being presented visually by class discussion or by having someone read subtitles .	☐	☐	☐	☐	☐	☐
12. summarized (or had class members summarize) the content of the filmstrip	☐	☐	☐	☐	☐	☐
13. obtained student feedback on students' understanding of the filmstrip	☐	☐	☐	☐	☐	☐
14. obtained student feedback on students' evaluation of the filmstrip	☐	☐	☐	☐	☐	☐
Slides						
The teacher:						
15. arranged the physical setting in advance in a way that would ensure that all students could both see and hear the presentation clearly	☐	☐	☐	☐	☐	☐
16. had equipment and materials assembled in advance	☐	☐	☐	☐	☐	☐
17. set up the equipment and loaded the slides according to manufacturer's recommendations	☐	☐	☐	☐	☐	☐
18. checked and focused the equipment in advance	☐	☐	☐	☐	☐	☐
19. had a spare bulb available	☐	☐	☐	☐	☐	☐
20. projected the image on the screen clearly and accurately so that it met the following criteria:						
a. no keystoning effect	☐	☐	☐	☐	☐	☐
b. well focused	☐	☐	☐	☐	☐	☐
c. well centered on the screen	☐	☐	☐	☐	☐	☐
d. readable	☐	☐	☐	☐	☐	☐
21. used slides that met the following criteria:						
a. content of the slides was simple	☐	☐	☐	☐	☐	☐
b. content was at students' comprehension level	☐	☐	☐	☐	☐	☐
c. content of the slides was of good quality in terms of color, clarity, contrast, etc.	☐	☐	☐	☐	☐	☐
d. slides aided in meeting the objectives of the lesson	☐	☐	☐	☐	☐	☐
22. prepared students adequately for the slide presentation (e.g., raised key questions, defined terms)	☐	☐	☐	☐	☐	☐
23. presented slides in a logical sequence	☐	☐	☐	☐	☐	☐
24. presented the slides at a logical point in the lesson	☐	☐	☐	☐	☐	☐

	N/A	None	Poor	Fair	Good	Excellent
25. paced the slide presentation according to the needs of the lesson and of the students	☐	☐	☐	☐	☐	☐
26. clearly emphasized and explained points being made visually	☐	☐	☐	☐	☐	☐
27. used the on/off switch to control attention (if appropriate)	☐	☐	☐	☐	☐	☐
28. summarized (or had class members summarize) the slide presentation	☐	☐	☐	☐	☐	☐
29. obtained student feedback on students' understanding of the slide presentation	☐	☐	☐	☐	☐	☐
30. obtained student feedback on students' evaluation of the slide presentation	☐	☐	☐	☐	☐	☐

Level of Performance: All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

NOTES

NOTES

NOTES

ABOUT USING THE NATIONAL CENTER'S PBTE MODULES

Organization

Each module is designed to help you gain competency in a particular skill area considered important to teaching success. A module is made up of a series of learning experiences, some providing background information, some providing practice experiences, and others combining these two functions. Completing these experiences should **enable** you to achieve the **terminal** objective in the final learning experience. The final experience in each module always requires you to demonstrate the skill in an actual teaching situation when you are an intern, a student teacher, an inservice teacher, or occupational trainer.

Procedures

Modules are designed to allow you to individualize your teacher education program. You need to take only those modules covering skills that you do not already possess. Similarly, you need not complete any learning experience within a module if you already have the skill needed to complete it. Therefore, before taking any module, you should carefully review (1) the introduction, (2) the objectives listed on p. 4, (3) the overviews preceding each learning experience, and (4) the final experience. After comparing your present needs and competencies with the information you have read in these sections, you should be ready to make one of the following decisions:

- That you do not have the competencies indicated and should complete the entire module
- That you are competent in one or more of the enabling objectives leading to the final learning experience and, thus, can omit those learning experiences
- That you are already competent in this area and are ready to complete the final learning experience in order to "test out"
- That the module is inappropriate to your needs at this time

When you are ready to complete the final learning experience **and** have access to an actual teaching situation, make the necessary arrangements with your resource person. If you do not complete the final experience successfully, meet with your resource person and arrange to (1) repeat the experience or (2) complete (or review) previous sections of the module or other related activities suggested by your resource person before attempting to repeat the final experience.

Options for recycling are also available in each of the learning experiences preceding the final experience. Any time you do not meet the minimum level of performance required to meet an objective, you and your resource person may meet to select activities to help you reach competency. This could involve (1) completing parts of the module previously skipped, (2) repeating activities, (3) reading supplementary resources or completing additional activities suggested by the resource person, (4) designing your own learning experience, or (5) completing some other activity suggested by you or your resource person.

Terminology

Actual Teaching Situation: A situation in which you are actually working with and responsible for teaching secondary or postsecondary vocational students or other occupational trainees. An intern, a student teacher, an inservice teacher, or other occupational trainer would be functioning in an actual teaching situation. If you do **not** have access to an actual teaching situation when you are taking the module, you can complete the module **up to** the final learning experience. You would then complete the final learning experience later (i.e., when you have access to an actual teaching situation).

Alternate Activity or Feedback: An item that may **substitute** for required items that, due to special circumstances, you are unable to complete.

Occupational Specialty: A specific area of preparation within a vocational service area (e.g., the service area Trade and Industrial Education includes occupational specialties such as automobile mechanics, welding, and electricity.

Optional Activity or Feedback: An item that is not required but that is designed to **supplement** and enrich the required items in a learning experience.

Resource Person: The person in charge of your educational program (e.g., the professor, instructor, administrator, instructional supervisor, cooperating/supervising/classroom teacher, or training supervisor who is guiding you in completing this module).

Student: The person who is receiving occupational instruction in a secondary, postsecondary, or other training program.

Vocational Service Area: A major vocational field: agricultural education, business and office education, marketing and distributive education, health occupations education, home economics education, industrial arts education, technical education, or trade and industrial education.

You or the Teacher/Instructor: The person who is completing the module.

Levels of Performance for Final Assessment

N/A: The criterion was not met because it was **not applicable** to the situation.

None: No attempt was made to meet the criterion, although it was relevant.

Poor: The teacher is unable to perform this skill or has only **very limited ability** to perform it.

Fair: The teacher is unable to perform this skill in an acceptable manner but has **some ability** to perform it.

Good: The teacher is able to perform this skill in an **effective** manner.

Excellent: The teacher is able to perform this skill in a **very effective** manner.

Titles of the National Center's Performance-Based Teacher Education Modules

Category A: Program Planning, Development, and Evaluation

A-1 Prepare for a Community Survey
A-2 Conduct a Community Survey
A-3 Report the Findings of a Community Survey
A-4 Organize an Occupational Advisory Committee
A-5 Maintain an Occupational Advisory Committee
A-6 Develop Program Goals and Objectives
A-7 Conduct an Occupational Analysis
A-8 Develop a Course of Study
A-9 Develop Long-Range Program Plans
A-10 Conduct a Student Follow-Up Study
A-11 Evaluate Your Vocational Program

Category B: Instructional Planning

B-1 Determine Needs and Interests of Students
B-2 Develop Student Performance Objectives
B-3 Develop a Unit of Instruction
B-4 Develop a Lesson Plan
B-5 Select Student Instructional Materials
B-6 Prepare Teacher-Made Instructional Materials

Category C: Instructional Execution

C-1 Direct Field Trips
C-2 Conduct Group Discussions, Panel Discussions, and Symposiums
C-3 Employ Brainstorming, Buzz Group, and Question Box Techniques
C-4 Direct Students in Instructing Other Students
C-5 Employ Simulation Techniques
C-6 Guide Student Study
C-7 Direct Student Laboratory Experience
C-8 Direct Students in Applying Problem-Solving Techniques
C-9 Employ the Project Method
C-10 Introduce a Lesson
C-11 Summarize a Lesson
C-12 Employ Oral Questioning Techniques
C-13 Employ Reinforcement Techniques
C-14 Provide Instruction for Slower and More Capable Learners
C-15 Present an Illustrated Talk
C-16 Demonstrate a Manipulative Skill
C-17 Demonstrate a Concept or Principle
C-18 Individualize Instruction
C-19 Employ the Team Teaching Approach
C-20 Use Subject Matter Experts to Present Information
C-21 Prepare Bulletin Boards and Exhibits
C-22 Present Information with Models, Real Objects, and Flannel Boards
C-23 Present Information with Overhead and Opaque Materials
C-24 Present Information with Filmstrips and Slides
C-25 Present Information with Films
C-26 Present Information with Audio Recordings
C-27 Present Information with Televised and Videotaped Materials
C-28 Employ Programmed Instruction
C-29 Present Information with the Chalkboard and Flip Chart
C-30 Provide for Students' Learning Styles

Category D: Instructional Evaluation

D-1 Establish Student Performance Criteria
D-2 Assess Student Performance: Knowledge
D-3 Assess Student Performance: Attitudes
D-4 Assess Student Performance: Skills
D-5 Determine Student Grades
D-6 Evaluate Your Instructional Effectiveness

Category E: Instructional Management

E-1 Project Instructional Resource Needs
E-2 Manage Your Budgeting and Reporting Responsibilities
E-3 Arrange for Improvement of Your Vocational Facilities
E-4 Maintain a Filing System
E-5 Provide for Student Safety
E-6 Provide for the First Aid Needs of Students
E-7 Assist Students in Developing Self-Discipline
E-8 Organize the Vocational Laboratory
E-9 Manage the Vocational Laboratory
E-10 Combat Problems of Student Chemical Use

Category F: Guidance

F-1 Gather Student Data Using Formal Data-Collection Techniques
F-2 Gather Student Data Through Personal Contacts
F-3 Use Conferences to Help Meet Student Needs
F-4 Provide Information on Educational and Career Opportunities
F-5 Assist Students in Applying for Employment or Further Education

Category G: School-Community Relations

G-1 Develop a School-Community Relations Plan for Your Vocational Program
G-2 Give Presentations to Promote Your Vocational Program
G-3 Develop Brochures to Promote Your Vocational Program
G-4 Prepare Displays to Promote Your Vocational Program
G-5 Prepare News Releases and Articles Concerning Your Vocational Program
G-6 Arrange for Television and Radio Presentations Concerning Your Vocational Program
G-7 Conduct an Open House
G-8 Work with Members of the Community
G-9 Work with State and Local Educators
G-10 Obtain Feedback about Your Vocational Program

Category H: Vocational Student Organization

H-1 Develop a Personal Philosophy Concerning Vocational Student Organizations
H-2 Establish a Vocational Student Organization
H-3 Prepare Vocational Student Organization Members for Leadership Roles
H-4 Assist Vocational Student Organization Members in Developing and Financing a Yearly Program of Activities
H-5 Supervise Activities of the Vocational Student Organization
H-6 Guide Participation in Vocational Student Organization Contests

Category I: Professional Role and Development

I-1 Keep Up to Date Professionally
I-2 Serve Your Teaching Profession
I-3 Develop an Active Personal Philosophy of Education
I-4 Serve the School and Community
I-5 Obtain a Suitable Teaching Position
I-6 Provide Laboratory Experiences for Prospective Teachers
I-7 Plan the Student Teaching Experience
I-8 Supervise Student Teachers

Category J: Coordination of Cooperative Education

J-1 Establish Guidelines for Your Cooperative Vocational Program
J-2 Manage the Attendance, Transfers, and Terminations of Co-Op Students
J-3 Enroll Students in Your Co-Op Program
J-4 Secure Training Stations for Your Co-Op Program
J-5 Place Co-Op Students on the Job
J-6 Develop the Training Ability of On-the-Job Instructors
J-7 Coordinate On-the-Job Instruction
J-8 Evaluate Co-Op Students' On-the-Job Performance
J-9 Prepare for Students' Related Instruction
J-10 Supervise an Employer-Employee Appreciation Event

Category K: Implementing Competency-Based Education (CBE)

K-1 Prepare Yourself for CBE
K-2 Organize the Content for a CBE Program
K-3 Organize Your Class and Lab to Install CBE
K-4 Provide Instructional Materials for CBE
K-5 Manage the Daily Routines of Your CBE Program
K-6 Guide Your Students Through the CBE Program

Category L: Serving Students with Special/Exceptional Needs

L-1 Prepare Yourself to Serve Exceptional Students
L-2 Identify and Diagnose Exceptional Students
L-3 Plan Instruction for Exceptional Students
L-4 Provide Appropriate Instructional Materials for Exceptional Students
L-5 Modify the Learning Environment for Exceptional Students
L-6 Promote Peer Acceptance of Exceptional Students
L-7 Use Instructional Techniques to Meet the Needs of Exceptional Students
L-8 Improve Your Communication Skills
L-9 Assess the Progress of Exceptional Students
L-10 Counsel Exceptional Students with Personal-Social Problems
L-11 Assist Exceptional Students in Developing Career Planning Skills
L-12 Prepare Exceptional Students for Employability
L-13 Promote Your Vocational Program with Exceptional Students

Category M: Assisting Students in Improving Their Basic Skills

M-1 Assist Students in Achieving Basic Reading Skills
M-2 Assist Students in Developing Technical Reading Skills
M-3 Assist Students in Improving Their Writing Skills
M-4 Assist Students in Improving Their Oral Communication Skills
M-5 Assist Students in Improving Their Math Skills
M-6 Assist Students in Improving Their Survival Skills

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